

SQUAW BAY RESORT (PWSNO 1280181) SOURCE WATER ASSESSMENT REPORT

April 24, 2001



State of Idaho Department of Environmental Quality

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SOURCE WATER ASSESSMENT FOR SQUAW BAY RESORT

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Idaho Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your particular drinking water source is based on a land use inventory within a 1,000 foot radius of your drinking water source, construction characteristics associated with your well or wells, and sensitivity factors associated with the aquifer your water is drawn from.

This report, *Source Water Assessment for Squaw Bay Resort* describes the public drinking water source, potential contaminant sites located within a 1000-foot boundary around the drinking water source, and the susceptibility (risk) that may be associated with any potential contaminants. This assessment, taken into account with local knowledge and concerns, should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

Potential Contaminant Inventory. Squaw Bay Resort, located on the lake south east of Coeur d'Alene, gets drinking water from two wells. Potential contaminant sources documented inside the 1000-foot boundaries around the wells include a petroleum storage tank, public and private roads, surface water, and septic tanks. Table 1 summarizes information about the sites, and contaminants of concern that may be associated with them. The map on page 5 of this report shows the 1000-foot boundaries and approximate locations of potential contaminant sites relative to the wells.

Table 1. Squaw Bay Resort Potential Contaminant Inventory

Map ID	Source Description	Potential Contaminants	Source of Information
1	Gas Station	SOC, VOC	Underground Storage Tank Database
2	Surface Water	Microbial	USGS Map
3	Septic Tank	IOC, Microbial	Public Water System File
4	Septic Tank	IOC, Microbial	Public Water System File
5	Roads	IOC, SOC, VOC, Microbial	USGS Map

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Well 1. Well 1, located in a wood frame structure in the lower part of the resort, was drilled in 1970 to a depth of 285 feet. It has a 6-inch casing and clay surface seal terminating in a granitic layer beneath 52 feet of sand, clay, gravel and broken rock. The static water level in the well is 36 feet below ground surface.

While the well is outside of the flood plain for the lake, it is at risk for surface water runoff contamination because the casing extends less than a foot above ground level. A 1997 sanitary survey of the system also noted that the casing needed to be made watertight. The well is about 100 feet from the lake, and needs to be evaluated for surface water influence. The sanitary survey also refers to a septic tank within 100 feet of the well.

Because the septic tank falls inside the sanitary setback zone, Well 1 automatically ranked highly susceptible microbial and inorganic chemical contamination in a Susceptibility Analysis of the system DEQ conducted February 14, 2001. Well site geology and well construction characteristics, combined with land uses inside the 1000-foot protection zone, make the well moderately susceptible to volatile and synthetic organic chemical contamination. Susceptibility Analysis worksheets for your wells are on pages 5 and 7 of this report.

Well 2. Well 2, drilled in 1994 about 32 feet from the summer-level lakeshore, is 201 feet deep. It is cased to a depth of 196 feet with perforations in the bottom 40 feet. Static water level in the well is 19 feet below the surface. The bentonite surface seal is 72-feet deep, ending in a shale stratum. The well casing extends 26 inches above ground level and is fitted with a watertight well cap, but the well is in the flood plain and should be tested to determine whether the source is ground water under the direct influence of surface water.

Well 2 ranked highly susceptible to microbial contamination because it is located less than 50 feet from the lake. Susceptibility to inorganic and organic chemical contamination is moderate. Evaluation criteria and details about how the well scored are shown on the Susceptibility Analysis worksheet. The worksheets also show formulas used to calculate the final susceptibility scores and the score ranges for low, moderate and high susceptibility categories.

Source Water Protection. This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Squaw Bay Store and Resort, source water protection activities should continue to focus on bringing the system into compliance with Idaho Rules for Public Drinking Water Systems as outlined in the 1997 Sanitary Survey. Sanitary setback zones around the wells need to be maintained as areas where no solvents, pesticides, herbicides, fertilizers, petroleum products or other potentially hazardous materials are used or stored. It might be a good idea to fence the area around Well 2 since it is located in an area heavily used for tent camping. With so many people using the resort facilities good septic system maintenance practices are imperative.

Proper care includes water conservation; not parking or driving cars over the drainfield; diverting storm runoff from the drainfield and reminding staff and customers not to flush oil, grease, diapers or garbage into the septic tanks.

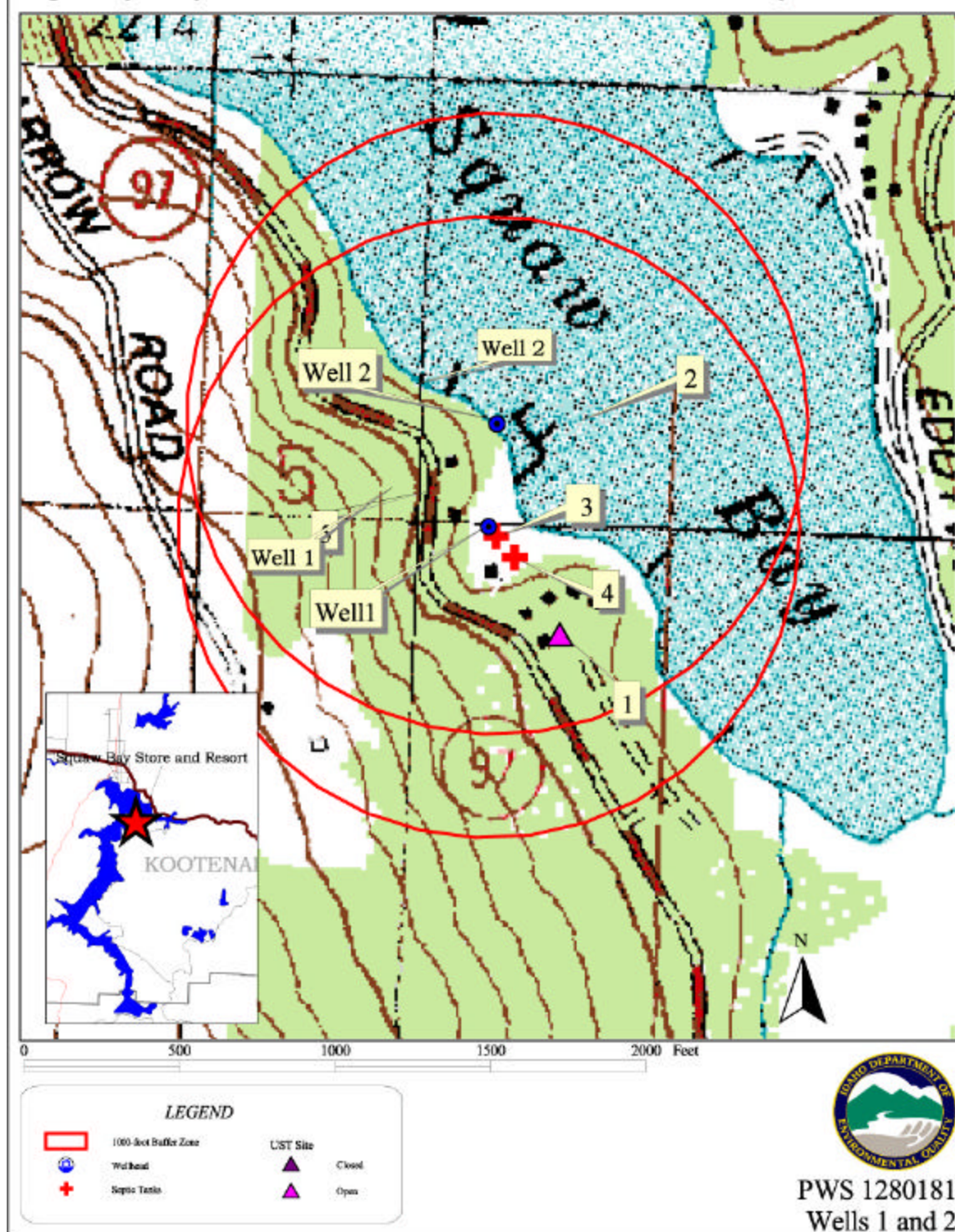
Because Squaw Bay Store and Resort doesn't have direct jurisdiction over the entire 1000-foot protection zone around its wells, it will be important to form partnerships with neighbors, and public agencies to regulate land uses that can degrade ground water quality. For example you can enlist the cooperation of the highway district to limit the use of road maintenance chemicals in the protection zone. Neighbors should be informed that they live in a well recharge zone, and can be asked to participate in water protection activities like household hazardous chemical collection days, septic tank maintenance workshops and the like. Another activity to consider is a periodic inventory of the area delineated around your wells to document land use changes, new businesses, roads, houses, and septic systems. The goal of source water protection is to maintain current water quality for the future despite the changes we can expect with population growth in North Idaho.

For assistance in developing source water protection strategies please contact Tony Davis at the Coeur d'Alene Regional DEQ office at 208 769-1422.

DEQ website:

<http://www.deq.state.id.us>

Figure 1. Squaw Bay Store and Resort. Delineation and Potential Contaminant Inventory.



Attachment A

Squaw Bay Resort Susceptibility Analysis Worksheet

Ground Water Susceptibility Analysis

Public Water System Name : **SQUAW BAY STORE AND RESORT**
Public Water System Number : **1280181**

Well# : **WELL 1**
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1. System Construction		SCORE			
Drill Date	9/3/70				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	1997			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	NO	1			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	NO	1			
Well is outside the 100 year flood plain <u>and</u> protected from surface runoff	NO	1			
Total System Construction Score		4			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
Land Use Zone 1A	WOODLAND, RANGELAND, OTHER	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES SEPTIC TANK	YES	NO	NO	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		High*	0	0	High*
Potential Contaminant / Land Use - ZONE 1B (1000-foot Boundary)					
Contaminant sources present (Number of Sources)	YES	2	2	2	2
(Score = # Sources X 2) 8 Points Maximum		4	4	4	4
Sources of Class II or III leacheable contaminants or Microbials	YES	2	2	2	
4 Points Maximum		2	2	2	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		6	6	6	4
Cumulative Potential Contaminant / Land Use Score		6	6	6	4
4. Final Susceptibility Source Score		12	12	12	11
5. Final Well Ranking		High*	Moderate	Moderate	High*

* Well ranked highly susceptible to IOC and Microbial contamination due to presence of septic tank in Sanitary Setback Zone.

Ground Water Susceptibility Analysis

Public Water System Name : **SQUAW BAY STORE AND RESORT**
Public Water System Number : **1280181**

Well # : **WELL 2**
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1. System Construction		SCORE			
Drill Date	1/6/94				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	1997			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	YES	0			
Well is outside the 100 year flood plain <u>and</u> protected from surface runoff	NO	1			
Total System Construction Score		2			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	NO	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		5			
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
Land Use Zone 1A	RANGELAND, WOODLAND, OTHER	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES Surface Water	NO	NO	NO	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	High*
Potential Contaminant / Land Use - ZONE 1B (1000-foot Boundary)					
Contaminant sources present (Number of Sources)	YES	3	2	2	2
(Score = # Sources X 2) 8 Points Maximum		6	4	4	4
Sources of Class II or III leachable contaminants or Microbials	YES	3	2	2	
4 Points Maximum		3	2	2	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		9	6	6	4
Cumulative Potential Contaminant / Land Use Score		9	6	6	4
4. Final Susceptibility Source Score		9	9	9	8
5. Final Well Ranking		Moderate	Moderate	Moderate	High*

* Well ranked highly susceptible to microbial contamination due to presence of surface water in Sanitary Setback Zone.

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Ranking:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility.

POTENTIAL CONTAMINANT INVENTORY

LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as **Superfund** is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.